Menlo Park Notebook #103 [N-80-06-29]

This notebook covers the period June-July 1880. It is a continuation of Menlo Park Notebook #42 and includes a summary of lamp experiments from that book. Most of the entries are by Francis Upton. There are also occasional entries by other laboratory staff members. Most of the book relates to experiments with bast fibers and, occasionally, with paper or bamboo. There are also notes and drawings relating to dynamo tests and to tests of insulation for electric railroad tracks and underground cables. The label on the front cover is marked "Upton." The book contains 282 numbered pages.

Blank pages not filmed: 278-279.

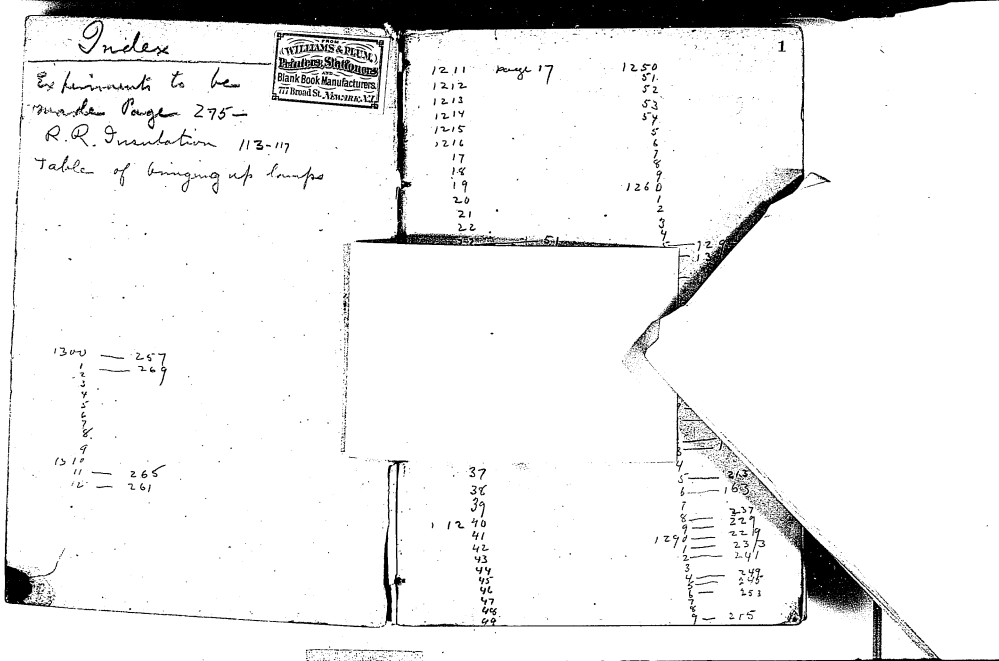
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Table of bringing up lamps

THE WILLIAMS & PEEL
Binders, Stationers
and
Blank Book Manufacturers.
777 Broad St., NEWARK, N.J.

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120 BROADWAY, NEW YORK.

Firm or Library
GENERAL ELECTRIC
— Broad St. —

May 1 1896

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60 3 25 9
20 1 1
15 cond

65 1.8129
15 1.1761
3 6 8
1.8736
.3010
37.5 candles 1.5746

July 20

66 1.8195
14 1.1461
.6734
1.5565
.3010
44.5 1.6975

Continued from Book U2

Goff Bast June 29 3

11.38 190 Ω.

3½ candles Blue cond

5000 ohms

Fine globules of Hg scattered through the globe.

44 candles

275-Ω.

Went at less than this

Monkey Boat June 29

Resistance before bringing up 790 Ohms
No 1214

2 Candles

265 L

1.50

31 Candles

325 L

Blew out Wrought Lamp - changed to Flue at Clamps

Monkey Cast June 297

255 Gift- 20 cells = 43

7½ candles

Blue all gone.

The blue appeared at 8-9 candles very faint

272 Q at 1½ candles decided.

2

414 candles, Obj blue

Castia ½ Minute

Regular Book. Gauge June 28.

2.15 Pump resistance

Resist cold

62 90
62 90
62 90
62 50
62 50
75-60 ohms

2.00 388 7°
174.35 Ohms

2.35 Heated

1/2 in below tube. gauge
5-1/2 candles
2 50 L.
1/2 in below the tube
6 1/2 candles

June 29

2,40 6290
6290
11600
11780
85.9 ohms
7½ candles
245 L.

2,41 284 L.
2,42 280 L.

37 candles blue on one clamp vacuum
2½ in ups tube went to globe
44 candles

1.9031
1.9031
1.6464
1007 1.9972
3.4498 2820

1.9031
1.9031
1.6464
1.9972
3.4232
16 1.2041
2.2191

2650 ft. lbs
165 ft lbs per cavalle

4.5185
3.4232
1.0953 12.4 per H.P.

2480 265 Q
500

258. Q.

29 Cavalles
No blue whiskers

16 Cavalles
6240
6240
6230
1310 100.7
20140
2110 Q.
80

140 cavalles

1500

232 Q ft

15500
62500
62790
62790
203330

232
77.3

101.6

1.8882
1.8882
1.6467
7.9936
3.4164 2610
14 1.1461
2.2703 186 ft. lbs per candle

Reg Book June 29 15

2.50 280
410 candles high reactions
No blue - sealed off -
Thirty-five Minutes from time
of starting pump
By very carefully looking
a very faint blue
could be seen

1211 Palmetto June 27 17

3-2	Lamp brought in
3-5	Started
3.30.	58. Left.
	58. Right.
"	12,000, ohms and all boxes in, when cold.
3.3X	5.2. candle,
"	306. R.
"	302 L
	6250. ohms.
	6250. "
"	6290. "
	6290. "
	5000 "
	2000 " 160
	32080

Palmetto No. 1211 June 29

3.35	7½. candles.
"	4200, ohms. 2000
"	8½ candles.
3.36	4000. ohms
"	6250 "
"	6250 "
"	6290 "
"	6290. "
	2000
	300. L.
	300 R.

Palmetto June 29.

3.37 9½. candles

" 3050. ohms

" 2000 "

3.39½ 11½. candles.

" 300 R.

" 298.2.

" 5000. ohms

3.42 18 candles

443000 5.6464
150 2.1761
3.4703.
13 .1139
2.3564
227

6000
25080
31080
150. Ohms

Palmetto, No. 1211 June 29. 23

3.43 298. L.

3.432 25,080. ohms.
49.00 "

3.44 348. L.

3.45 67.4 inches

3.47 65.3/4 "

" 18,830. ohms
" 6700. "

12553.6
1276

342
114

2.0569
2.0569
1.6464
12716 7.8972 - 4540
3.6533
44 1.6435
2.0139

108 ft. lbs. per candle

340. L.

4-20 44 candles

342 R

4-45 Taken off sealed off.
Very little blue in this lamp

170
3
340
113

2.0531
2.0531
1.6464
7.5638
3.3164
0.9294
2.3870

16.5

244 ft. lbs per candle

Willow June 29 80

5.38

7½ Candles
171 Cycs

8 Candles
8/2 "
171 L.
171 R.

5.42

37669
1 2 3 4 5
5 4 6 6 9
273.

8/2 Candles
170 L.

20 / 147694
2 2 8 9

Wilcox Carbons - Series 9

5.115 39 Candles

37669
10000

202 Cir.

65½ inches

66½ inches

8.50 37669
9100

30 Candles

195-2

65½ inches

8500
37669 201 2

2 ft / 46569
2828

133 2.1239
2.1239
1.6464
7.6345
3.5287
46 1.6628
1.8559

71.7 ft. lbs. per candle

66.5 1.8228
13.5 1.1303
.6925
2
1.3850
.3010
48.6 candles / 4840

Illinois Eastern Sept 29

5-52 66⅔ miles
200 Lbs 133 Volts

8900
3766

46569
232

5-56 Brake

This lamp gives blue
extremely hard to make

Regular paper

Time	Candles	Total ft lbs	ft per candle	Ohms
1-50	16	4100	256	94.1
1-55	17	4130	242	92.7
2-	17	4010	238	91.4
2-7	19	4080	214	91.3
2-10	19.5	4000	205	90.3
2.14	21	4040	191	90.2
2.24	21.25	3990	188	90.
3-51	15.5	4060	262	94.9
3.52	16	4040	252	96.1
3-54	19	4100	216	94.6
3.55½	19.5	4081	209	95.5
3 58	20	4270	213	95.6

Lamp on Pump

Summary Book 42 page 175

Since	Bead Cumulative	Liters Total	Liters per Hr	Flow Liters per min	Ohms
10-14	6				
	7				
	9¼				
10-18	12	2770	231		125.6
10-20	13.5	2730	202		121.6
10-21	14.7	2700	183		120.8
10-22	16.5	2840	172		119.1
10-23	17.5	2910	166		117.6
10-24	18	2960	164		117.4
10-25	20.5	2960	141		117.1
10-32	20	2866	143		116.

Summary Book 42 page 201

Time	Breast Candles	Total Foot lbs.	Foot lbs per candle	Ohms
2	5.5	2520	460	121.7
	8	2570	321	119.4
	8.5	2770	326	118.9
	9.5	2800	294	117.1
	11	2820	257	116.1
2-7	12	2790	233	114.1
2-7	12.5	2500	232	110.4
	13.5	2820	209	112.4

Bast fibre 0".005 X 0".012

Gum 30

0".012 X 0".012 = 144 = C

0".005 X 0".012 = 60 = C'

17/2 — 0".034

24/2 — 0".048

0".012 X 0".012 = 144

44 candles from 48 surface

All ravel X candles from 34 surface

44 : 34 :: 48 : X

1.5315
1.6812
3.3546
1.5692

X = 34.1 candles

Let y = candles from side

Then

$12 : 5 :: 44 : y$

$y = \frac{5 \times 220}{12} = 18.3$ candles from side

Energy from $0''.005 \times 0''.012$

39.1 parts

if 44 parts from $0''.012 \times 0''.012$

Resistance = $\frac{1}{60}$ of $0''.012 \times 0''.005$

Re— = $\frac{1}{140}$ of $0''.012 \times 0''.012$

Let y = E.M.F. on $0''.005$

$\frac{y}{\text{[illegible]}} =$ —

$$\frac{a^2}{140} = 44$$

$$\frac{x^2}{140} = 39.1$$

$$\text{Const} = \frac{44 \times 140}{a^2}$$

$$x^2 = \frac{39.1 \times 60}{60 \times \text{Const}}$$

$$x^2 = \frac{39.1 \times 140 \times a^2}{44 \times 60}$$

$$x = \sqrt{\frac{39.1 \times 140}{44 \times 60}}\, a$$

39.1

7

273.7

44

3

132

2.436 =

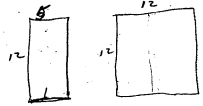
2.1206

.3154

$\sqrt{2.06}$ = 1.4

1.4 Times the E.M.F of

Some candles



June 30

Resistance coils

37,620
12,000
35,000
84,620

31,370
6,250
37620

423 Ohms.

1½ to Volt-

100 of resistance

25080
7300
175-L.

195-L.

18 Candles

25080
3300

Base 5×12 June 30-80

1902

17½

192 L.

18 Candles Brighter blue - not so blue as others at Mill-E Edison

Trimo Fan Co.

189 L.

13 Candles

3700

18
44
62
31

201
2
402
134

44 candles

2.1271
2.1271
1.6464
7.5482
3.4488
1.4914
1.9574

2810

90.5 ft lbs per candle

No 1223
Base 5 x 12 June 30

2950
25080

19½ candles

200 Gift not much blue not as much as this at U.E. Edison
250 ohms Hot

18 candles

2032 Ω

25080
3300
2783

200 R = Ω

6.0 : 144 :: 105

6 | 1440
240

144
105
720
144
6 | 15120
252

at 44 candles.

B.P.		Ohm	Ft Lbs. for candle
	Palmetto	127.6	103
	Bartlett 0".012 X 0".012	99.6	101
		107.6	90.5
	0".005 X 0".012	283.	90.5
	0".012 X 0".012	106.6	93.1
	46 candles		
	Willow	232	71.7

Rest 5-4 1/2 June 30 - 2a 55 Test

10-20 Started pump

37620
22000 Reach cord.

2 in. in tube

11- Heard 130 C.

11-3 Good Vacuum.

11 1/2 Lighted 1 candle

25080
7350 ✓

130 Cyl

170 C.

11 1/2 candles

3 in from top

56

67.6
2
1352

2.1309
2.1509
1.6461
250 7.6021
3.5103
31 1.4914
2.0189

102 ft lbs per candle

2nd Test 0.005 X 0.012 No. 122 X
Base 5-8-12. June 30. 2nd Test

57

11-18 188 L.
7 3/4 candles

185 R.
157 L.

25080
2380 } - Very faint blue

11 22 203 L.
18 candles

25080

11-30 Broke

87

1.9395
1.9395
1.6464
8.0685
3.5939

3920

Galva 3920 ft lbs
Calor 3810 " "

5939
5801 7
0138 2

103%

20 cells 65 Q Ls

1-29 Temp. air 85° F.

1-30 Started 85-

Temp H_2O 72°.25
1.2.75
85-
97.75

6290
6290
4500
17080
85.40

1-33 261 R = Δ
260 R = ◁

87 Volts

1-35 4450 Ohms
260 R - Δ

1-39 Stopped 96°.5 F
72.25
24.35

1.0515 Kilogramme

2.204 lbs to 1 kilo

44.5 Gramme Comps

203 Cu Vessel

44.5
247.5

1.0515
2475
8040
20
824
2.204
775
Comps 9
24.35

1.9159
0.3432
2.8893
9.0458
1.3865
3.5807

3810

Current test on audibility and brake control

Pump became very dirty and Hg ran back into lamp.

Book 63 page 37

A filament of manilla carbon estimated as 0".005 in diameter 2".4 long resistance cold 505 Ohms resistance 62.490 Ohms per mill foot or 5.207 per mil inch

A Bast fibre 0".012 X 0".012 195 Ohms cold

85.190 Ohms per mil foot
7.099 " " inch

Manilla 5.207 per mil inch
Bast 7.099 " "

0".002 X 0".012
Comparison 0".007 X 0".012

Book 63 p. 150
0".007 X 0".012
at 27 ~~candles~~ corrected for
two cinders
27 candles
142 ft. lbs. per candle
0".012 X 0".012
Book 42 p. 239
29 candles
132 ft. lbs. per candle

Box of Cells 1 211 = D
2 211
3 211
4 213
5 211
Standard all good June 30, 1911

1.9375
1.9375
1.6464
74.6 6.1273
3.6487 446-0
4.5185
.8698 7.4 Jan H.P.

3.6487
1.5051
2.1436
140 ft lbs per. candle

260 = D
86.6
6290
6290
235-0
14930
74.6 Ohms
32 candles

Boat fibre
Ø.005 X 6.012 July 1.

Very bad spot in one side.
extremely [illegible]
ment [illegible] immediately.

20 cells = 43
1 Volt = 2
Resistance 100 times

10.44 5.3¼ C

" 31,370. ohms.
" 9,000. 403.7 Ohms

" 260. L.
" ½ 262. R.

Very faint ring of blue
out to ½.

Bast fibre
0".005 X 0".012. July. 1. Bs.

10.48 8. 3/4. candles.

10.50 3/2. L.
3.16. R.
Very high vacuum.
At the top of the lamps a bad spot and blue around it.
The lamps when it broke was filled with blue. One side of carbon incandescent the other red with red lamps.

1600 : 2454 :: 80

60

196320

122 Volts

5' 2930
3' 2041
2.0889.

July 1-80

Wrought iron motor
92 Volts running 11 lamps
94 Volts all lamps off
100 Volts after short time

.1227
2454 revs p.m.

200 Volts on magnet
115 Volts from armature
when saturated.

7½ pennamotor
102 Volts no lamps
92 Volts on lamps
18 ohms in with magnet
90 Volts

11-40 32 ohms in ninth magnet 88 Volts

12-5 86 Volts

Bast-fiber 0".005 x 0.02

11.45 | 37600 ℊ lbs cold
22000
Glide Am iron & carbon

31370 ℊ
9400

268 L.
5 Candles

5½ Candles Bo Plate

11.52 | 31370
8800

275 L.
8½ C.

Base 0.005-by 0.012 July 1. 80

11.55- 8000
31370

13 C
Very faint blue

278-2.

7000
31370

12- 15 C. blue all through globe

295 2.

6000.
12 31370

Sealed off-

Tried resistance box
30.1 Ohms = 30100

Bark fibre July 1. 80

Clamps Large

14½ Candles

190 Ω.

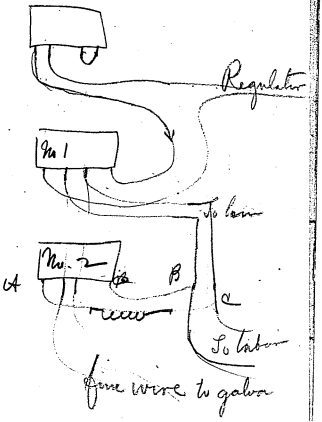
18830
5900
12730
123

210 Ω. Very Blue
210 R 65 inches

175 Ω.

14 Candles very slight blue, bad spots (amely) in carbon, a little Ag in bulb

Clamps


Regulator
No 1
To Lamp
No. 2
A
B
α
To Station
fine wire to galva

Electric exp[ress].

1100

6 | 15.7

2.6

1100

2600

26

2800.00

55-00

400

400

160000

44

640000

64

2 | 7040.000

24 | 352 20,000

17.6000

Ea 39

6

234 turns on [illegible]

small one[illegible]

75 Volts at 1800

since then 2.2 [illegible]

5500 r.p.m. the [illegible]

33000

5

165,000

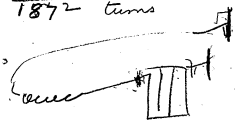
be about twice as strong

234 : X :: 75 : 600

$\frac{3}{4} = \frac{6}{8}$

$\frac{234}{8}$

1872 tons



Webers

18.5
19
37.5
524

1.5740
2.7193
8.8549
2.8373

.0715
.0697
.1402
.0701

141
13.6
.07
9.52

149
16.3

Plan of arrangements
page 87

18.5
On magnets 19
Total 262
263

20 cells = 65
65

From No 1 41 L
41 R

No 2 49 L
49 R

166.7
22.2

151
17
.07
114

4-34

No. 2 — 66.5 L
67 R

No 1 — 51 R
51.5 L

4-42

No. 1 — 53 L
52 R

No. 2 — 69 R
69 L

4

167
22.3
.07
1561

196
32

180
26.6
.07
1862

118
39.3

4-50

No. 2 80

No. 1 42

Magnet of No. 1 broken

No. 2 82 L

82 R.

No 2 96 R

No 1 67

No. 1 80

No. 2 118

100
33
.07
2.31

148
49.3

155
51.6
.07
3.612

220
73.3

267
89

220
73.3
.07
5.131

22 | 1.3424
320 | 2.5051
.0687 | 8.8373

No. 2 148
No. 1 100

No. 1 155
No. 2 220

No. 2 267
No. 1 220

On magnet 22
On line 320

Changed by by taking the resistance out of the line with
No. 2 355

118.2
3.06

97

No. 2 Three Ohms
in line with magnet
of No 2

Note
Fixed so that magnet
was on direct line to galva

No. 2 = 270

On magnet	16 L	
	15.5 R	
Magnet	17.5 R	
	18.5 L	
	18. R	
Armature	291 R	
	292 L	

Armature — 316 L

Magnet — 24 L
23 R

1048 revs.

~~Armature — 36 R~~

Magnet — 40 L
40 R

Armature — 370 R

Armature — 333 R

Magnet — 27 R
275 L

20 cells. made 43 L
425 R

Magnet 35 R
36 L

Armature 248 L

Armature 25-5 L
Magnet 48 L
47.5 R
armature 25-4 R

Short circuiting gave
150 Volts
145

233 convolutions
6
1398 Convolutions on
magnet

20 grains
28 H.P. gives 37 hennies

Regular test

12 | 16 candles 101.8 Ohms 165 ft lbs per candle
13 | 14 " " 186 "
35 | 16.5 " 100 Ohms 1893
1772

Palmetto 150 Ohms

page 80 13 candles 227 ft lbs per candle

Bamboo

17.1 | 5.6664 | 15 candles
7.7652
3.4316
1.1761
2.2555 | 182 ft lbs per candle

Bamboo Fibre July 15

15 candles

6250
6250
6296
6290
9200
34286

171. Ohms

.308 = 0 on H.R

102.6 Volts

102.6 2

2.0100
2.0.00
1.6464
7.9172

5.6644

3.5836

1.5 | 38.30 | 2.55
30
8.3
7.4
80

Bamboo Fibre 0".012 X 0".012

2-14 49 candles
or 66.5 inches
No blue

2-25 Stopped to Explain
Started again about
1/2 minute

No. 1262 Lasted about
1/2 minute

Both went in the
Clamps as cross section
from fibre to fibre

1 1/2 minute

1150 Ohms Total
50 Ohm Conductor
6.5 Ohms one side

7.75
5
2.75 Ohm One side

7.25
2.5
4.75

Both sides
6.5
2.75
9.25
4.62

6.5
2.75
9.25

Insulation R.R. July 13

4000
200
Track & track 10 Ohms

2300
200
One track to ground

2950
200

1550
200
both tracks

More current

1450
200

4000
200 = 20 Ohms
10
10 Ohms

Conductor $\frac{2020}{200} = 10\Omega$

Results

Resistance on wet lay from track to track

10 Ohms

One side = ground

6.5 Ohms

Other 2.75

9.25 Ohms

Both sides

4.5 Ohms

20 · 3/4

365
15
1825
365
5475
10
547.

26.
600
18000.

15 M

15 | 461 | 30 cts
45
110

30
47
34.7
8.6
26.1 cts

Estimate

600 Lights. 3½ lbs of coal per H.P. in the current five hours.

6 lights per H.P.

100 H.P

350 lbs of coal an hour

35 5

175 X 1.65 / 1.65 / 7 | 1225 | 175

224
45

Oil & wast .25
Engineer 3.00
Money invested 6.500
Depreciation 4%

6,500.
.04

365 | 26 0.000 | .0.71
2555
450

15 | .71 | 047
60
110

※ 3808 ft. lbs. for 17 candles

Resistance 114 Ohms

3808 | 3.5807
17 | 1.2304
2.3503

224 ft lbs for candle

3842 | 3.5845
16 | 1.2041
2.5854

240 ft. lbs per candle

※ Book 104 page 28-29

Lamp No. 1253

Galva

83.3	1.9206
8	1.9206
	1.6464
86.4	8.0635
	3.5511

3560 ft lbs

10-27 69° 7

Started

Temp. air 81
69
12
81
93

250. R
249 L

3)250
83.3

6290
6290
4760
2)17280
86.40 hms

92.125
69
23.125

10-37 92°.125

3560 / 3280 — 3.5511 − 3.5159 = 0352

1.08 %

.531 | 9.9196
Page 61 | 0.3432
| 2.8893 |||
Comp. 10 | 9.
23.12 | 1.3638
3.5159

Calor 3280 Kl. lbs

Wt. of Kerosene C_2H_2O

1.058 Kilo
.247
.811
20
.831

74.3 1.8710
1.8710
1.6464
89.9 8.0462
3.4346
Galvo
ft. lbs. 2720 .4116
.0230

1.05 %

Calor. of Galva

11-22 70°.57
Started

82
70.5
115
82
93.35

223 = Ω
74.3 Volts

6290
6290
5400
17980
89.9 Ohms

11-35 93°.97
11-22 70.6
13 23.4

Calor of Salva.

1066 Grammes
247
819
20
.839 — 9.9238
6.3432
2.8893
Comp. 13 8.8861
23.4 1.3692
3.4116

Calor
2580 ft. lbs

.84 1.9243
1.9203
1.1464
7.1995
3.4907 3100
16 1204
.2966

198 ft. lbs. per cond

Bar $\frac{0.012}{X 0.017}$ Ends differ in Phraseology
Fibre No. 1265

16 candles

6290
6290
6250
1200
20030 100.15

252 ℓ
252 k
84 Volts.

107 2.0043
2.0043
1.6464
141 7.8506
3.5058 3204
18 1.2553
.2503

178 ft. lbs per candle.

Base 0".012 X 0".012
Bamboo Fibre No. 1266

~~Lights~~ Candles
18 candles.
6250
6250
6290
6290
3120
28280 140.9 Ohms
303
101 Volts

1.9926
1.9926
1.6464
140 7.8539
3.4855 ft
15 1.1761
3060
.3094

204 ft. lbs. per candle

Rumford No. 1266
0"012 X 0"012

15 candles

1295 = Ω
983 Volts

Some resistance [illegible]
Rheostat

140 Ohms

111.6 2.0477
2.0477
1.6464
126.6 1.8975
3.6393
4350

4300
5
34400

Book No. 1266 0"012 X 0"012
Soaked out clamping bars
in double chloride N_2H_4 2
Pt. Book 57 page 15-5

~~4 1/2 candles~~ 66.5 inches
48 candles on bar
2-51 Started
Not much flame
6290
6290
6250
6500
25330
126.6 Ohms

3355
111.6
3- Went very suddenly clamp
and Rod

9 minutes

4.6185
3.4413
.1.0772

12 per, 11

2
2
4L 1.6464
160.4 7.7949
3.4413
2760, 1.2041
.2372

172 ft. lbs per candle

~~Rattan~~ Bamboo 6".012 X 6".012

16 candles 1
3 ons = D 17 candle Edge

6250
6250
6270
6290
7000
32680
160.4

2.0607
2.0607
1.6464
7.8374
3.6052.4030

Bamboo 0".012 X 0".012 regular size

3-15 66".5 ~~one~~ bar or 48 candles

345 = 0
115

4000
6290
6290
6250
6250
129080 1453.4

3-24 Went out

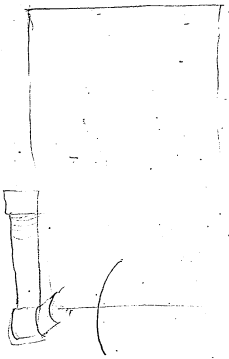
Black on clamp scamping

9

Book No. 1265 July 14. 80

Reversed current

4-14	Started 48 candles
5-55	Broke
4 14	
1-41	1h 41'
	60
	101 minutes
	Slightly blackened the glass [illegible] lamps



144

145

July 16 –

Test insulation of lines underground

Conducting wire

200/25.20

12.6 Ohms

18 wire circuit

6290

7620

14110

70.5

12.6

57.9 Ohms insulation

Carmen circuit

2800

1400 Ohm

12.6

1.40 Ohms

With ground

~~19~~ Ohms

2900

8000
200000
1
14000

One side
20 | 210.0 Ohms
10.5 Ohms other side
6.3
4.2 Ohms | 12.6
6.3

4.2 Ohms to ground

2 | 29.00
14.5
6.3
8.2 to ground

Insulation conductors

6 wire circuit

6290
6290
2300
14880
74.4
12.6
61.8

One side ground

6290
100
6390
31.9
6.3
25.6

other
16450
3225
6.3
25.95
25.6
50.5

Insulation conductors

Edison's lines

One side with ground

2 | 24.20
12.1
6.3
5.8 Ohms

3 | 150
15.7
6.3
9.4
5.8
2

2 | 850
14.25
12.6
1.65 Ohms

Page 145 conducting wires from galvanometer 12.6 Ohms
18 wire circuit.

6290
6290
900
13480
67.4

67.4
12.6
54.8 Ohms

More E. M. F

6290
6290
2000
12780
63.9

63.9
12.6
51.3

One side with ground

6290
31.45
63
25.15 Ohms

Othe side

6290
2300
8590
429

25.1
429
680 Ohms

July 16 1880 155

Wire & ground	Ohms	Ohms	Ohms
18 wire circuit	55.	25.	43.
Carmen circuit	1.4	4.2	8.2
6 wire circuit	61.8	25.6	50.5
Edison's line	1.6.	5.8	9.4

The weather has been raining for two weeks and the ground is thoroughly wet.
Houses on Edisons and Carmens circuit.

Lamp No. 126 & Base
Reversing current

11-43

Very rapid reversal
Reference N. 4

3150
1575
126
3.15 Ohms

Edison line
Human coil
wound

Conducting Circuit

Carmen's July 16

12 | 2950
14.7
12.6
2.1 Ohms

2 P.M. 4 P.M. same

One side

| 3000
15.00
6.3
8.7 ohms

other 8.95 ohms

2.0277
2.0277
1.6464
7.7878
3.4896 3080

Lamp 1283 Bamboo

16 candles

6250
6250
6290
6290
7650
32730
163.6

163.6 Ohms

3.20 = Ω
106.6

Lamp 12.8 ± Bamboo

1/4 candles

3-34 | Less than 8 minutes

Nos. lamps in case

1274 Bast fibre ends scraped Book 57, p. 159

1268

1271 Bast fibres

1270

1272 Book 57 157

1275 Bast

1269 Bast Book 57, 13[illegible]

Larmen's line

285-0.
1425
12.6
1.65 ohms

1800
9.
6.3
2.7

1800 ohms
9.
6.3
2.7

P.M. 2900

Gas jet July 17-85

	Ground glass
13	11
12.5	10.5
12.5	10
12.75	11
13.	11.25
5 | 63.75	5 | 53.75
12.75	10.75

E. L

Large Ground glass tube

12.5	9.75
12.5	9.75
14	11.5
39.00	31.00
13	10.3
6	0.9031
39	1.5911
5	9.9120

2.0%

26

6290
2500
1880
35
2333
23
23
00

111

20 | 21 8 3 0 (109
20
18 3
1 8 3
0

18530
35000

3285
95

95 1.9777
1.9777
1.6464
7.9547
~~3.5975 3960~~
3.5565 3600

269 = 0

Rs 6290 × 2 + 6250 + 3500 = 1119

Def 285 at 12.20

Def 295 Res. 109 ohms at 16°C

at an angle of 45° it gave 19Ω at 90° it gave 14Ω.

July 17-80

In Frosted globe

295 = D

293 = D

14

14

12.5

80
66.5
13.5

No 1279 Beat

253 Volts
1.5
44 candles

2-41

6290
6290
7990

3-5 Went at lamps in glass cracked

14 minutes

Q Pool

Trainers Portland

2

2 / 3000
15

Boat
Lamp No. 1271

3-19 Started

255

44 candles

6290 × 2 + 6000
6290
6000
18580
929 Ohms

Ohms

4.21 Cursed

2

Bart

Lamb NW 1272

4.31 at 44C

435 [illegible]

Lamb 1270

319
106.3

2.0265
2.0265
1.6464
8.0975
3.7969

79.9

6260

.7663
Page 61
19.5
comp 4.5

9.8938
0.3432
2.8893
1.2900
9.3468
3.7631

5800

3.7969
3.7631
.0338

1.08%

Galva & Calor

Temp air 77° F

10-8 I started
Temp H_2O
67.4

319 Ω. R

6290
6290
3402
15980

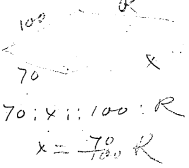
$R = \frac{15980}{79.9}$ 79.9 Ohms

86.9
67.4
19.5

0-12-30 Temp 86°9 F

1010 Ohmmes

247
763
20
783



Bucket of Tar July 19

~~100~~ 6270
70 25160
100 25000
12000
7 62160
7
435180 Ohms

Wrong this is an estimate
of galvanometer
Tar with plates the
2000
40,000
needle did not move when
current passed through
with all resistance out
on other side. The
tar seems to be all right

1.8954
1.8954
1.6464
7.1890
3.4262 2670
7.12 0.1475
2.5737 375

7⅛ candles

235
237 236
78.6

65 = 20 ohms

R

6250
6290
6290
1900
20530
102.65 Ohms

1.9101
1.9101
7.9864
11.6464 — 2840
3.4530
8.6 | 6.9345 — 330
2.5185

Beat No. 1275 0.012 X 0.012 July 19

8.6 candles

244
244
81.3 Volts

6290
6296
6250 — 18830
1920
20650
103.25

1.9207
1.9207
1.6464
7.9898
3.4776 3000
9.8 0.9912
2.4864 306

16/8 33000 4.5185
128 2.1072
2.4113
258 ft lbs per candles

Boat No 1275

9.8 candle

250 H.R
833

18830
1650 Others
20480
102.4

~~2.0253~~
~~2.0025~~
1.6464
1.9375
1.9375
~~7.9907~~
~~3.2961~~ ~~1970~~
~~1.1461~~
~~2.1600~~ 3320
3.5210
1.1461
2.3749 237

Book 1275

14 candles

260 N.R
86.6

18830
13 ms ohms
20/30
100.6

1.9474
1.9474
11.6464
8.0039
3.5451 35.10

Bust 1275

175 candle

1266
88.6

1000 Ohms
18830
19880
99.15

2.0055
2.0055
1.6464
8.0487
3.7061 5080

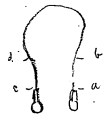
Bash 1275

48 candles 66½ inches

8-40 304 101.3

6290
6290
5300
7880
89.4 hours

8-53 Broke 13 minutes



Clamp Black
a-b, c-d black rust steel color

1.9694
1.9694
1.6464
7.9028
3.4880 3080

Bank No. 1270 July 26

Very regular
17.5 candles

280 = 4
281R = 4 73.2
6250
6290
6290
6200
25030
125.15 Ohms

2.0386
2.0386
1.6464
7.9431
3.6667 4640

Bast No 1270 July 20

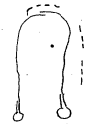
48 candle

9-20 328

109.3

6250
6290
6290
4000
22830 114

9-27 Went 7 minutes



Black

Clamps black

1.9411
1.9411
1.6464
7.9578
3.4864 30.60

Bank 1268

at red

Brighter spots marked outside

1278

15.5 candles

262
87.3 Volts

6250
6290
6290
3300
22130
110.65

Boat 1268

Last one minute

Broke in two places

Book 57

✓1282 Bamboo p 163

1283 Dipped Cll pt

1284 0".012 X 0".012

✓1285

✓1286 Bamboo 0".012 X 0".012

✓1287 Ends 3/32" wide

✓1288 Beech syrup

✓1289 Book 57 p 163

1290 Bamboo ~~Beech~~ 0".012 X 0".012 p 165
Ends 3/32

1291 Beech p 165

1292 syrup
pt ends

1293 Bamboo 0".012 X 0".012

1294

1295 Carbonized flat warp
Ends 3/32 p 167

1296 Bamboo regular
flatwarp p 167

T297

1298 Bamboo

1299 pt. 9- 10%

1.9685
1.9685
1.6464
7.9281
3.5115 3250

at end perfect
Desks some distance from clamps

16 candles
(279 = D
9/3

6250
6290
6290
4800
23630 118.15

On one side white hot into the clamps small pieces broken off and leaves of blades as blanks. Other side used into clamps

2.0346
2.0346
1.6464
7.9788
3.6944 4950

10-18 44 candles
(325 = D
62 90 108.3
62 90
84 lbs
20980
104.9 Ohms
The light for a time was somewhat lower and for a time 333 = D The engines varies considerably

~~11-18~~

11-18 Stopped to test lines
Edison took away to examine

Bamboo No 1285

2.0067
2.0067
1.6464
8.0398
3.6996 · 5010

5000 / 33000 / 6.6

Baseboard 1285

10-1

86.5 inches
= 48 candles
No blue
305
101.6
6290
6290
5670
18250
91.25

10-23 Went at above clamps

523 2,71.85
132 7.8794
20 1.3010
1.08 0.0334
85.5 1.9823
1.9323
1.6469
7.9605
3.4718 2916

Bamboo No 1299
Pt. 9n 10% foil around carbon at clamp
0"·012 X 0"·012

16 candles

6290
6290
6290
3100
21920 109.6 ohms

Du cells 65
67
132

260
263
523

40
30
27

1.9850
1.9850
1.6464
8.0128
3.6292
4.5185
.8893

4350 ft. lbs.

7.75 H.P.

Bamboo No 1299

4-12½ PM — 48 Candles

290 M R
96.1
6290
6290
6250
600
19430
97.15

4-50 Blue flame at the Lamps ..

5-5 Went

60
12.5
475
5
525

13.5 candles

17

350
116.6 2.0662
2.0662
1.6464
205 7.6882
3.4670 2930
4.5185
1:05/15

11.5 per H.P. of 17 fan

Regular paper old month
No 1280 July 21.

Two slots not very marked
$76 Application

17 candles

6270
3
24870
6250
6250
3800
47170 205

175+175
1.5+

7½ candle edge

2.0952
2.0952
1.6469
7.8013

3.6381 4340

9-29 66 1/2 inches on bar

$\frac{1207}{673} = 0$

6290
6290
6250
6250
6500

67.3
2

134.6

9-32 31580

157.9 ohms

1.9542
1.9542
1.6464
127.6 7.8935
3.4483 2810

Bamboo No 1286

0".012 X 0".012

Ends $\frac{3}{32}$

15 1/2 convolutions

290
90

6290
6290
6250
6258
4450
25536
127.6 Ohms

2.0224
2.0224
1.6464
7.9494
3.6406 4307

Rambouillet No 1280

66 1/2 on hand
Some blue in camp

10-48 1316
1083

3650
6250
6290
6290
22480
112.4

11— Went

Bamboo No 1287

Good carbon
66½ inches on
46 candles
went in one minute
very high resistance

1.9850
1.9850
1.6464
7.8465
3.4629 2900

Boat 1289
for vacuum oxydizer

Bamboo
No 1290

Bad ~~spot~~ in bottom of
hook for 1/2 inch (flow) -

16 candle

290
196.6

96 5-0
62 3-0
6 2 9 0
6 2 9 0

28486
142.4

2.0306
2.0306
1.6464
7.9103
3.6179 4150

Bamboo No 1290
Brent

48 cubics 66.75

11-22

32
107.3

6250
6290
6290
5750
24580
1221.9

11-25 Went

1.9854
1.9854
1.6464
7.8894
3.5066 3210

Bast
No. 1291

15 1/2 candles

292
290 96.7

6290
6290
6250
7050
25880
129

2.0453
2.0453
1.6464
7.9531
3.6901 4900

Beat
1291

11-33 6'6½ inch

(333
111 Volts

3450
6290
6290
6250
22280 111.4

11-45 W unit
33
12

1.9939
1.9939
1.6464
7.85-11
3.4853 3050

Back 1288

bad place

16 candles

296
98.6

9356
6.250
6290
6290
28180
140.9

2.0569
2.0569
1.6464
7.9211
3.6813 4000

2.0477
2.0477
1.6464
7.9158
3.6576

4540
4600
19340
4670

Back 128 of

11-56

66".5

342
114

5150
6290
6290
6250
23980
1199

Again

5450
6290
6290
6250
24280
1214

335
111.6

12— Went

Clean beats on one aisle

1.9850
1.9850
1.6464
7.8636
3.4800 3020

Book No 1292

Book flames

16 candles

290
196.6 Volt

18830
8550
27380 136.9

Slight blue

Book No 1292

12-9	48 candl 337
12-11	Went This was brought somewhat higher than 44 candles At top

2.0306
2.0306
1.6464
7.8164
3.5240 3340

Bamboo
No. 1295 Carbonized
Flattened

15 3/4 candles

1322
107.3
5450
6250
6250
6290
6290
30530
102.6

Bamboo
No. 1295

66½ inches

Very high for a moment ment

About 1 minute

2.0140
2.0140
1.6469
7.7997
3.7741 2980

No. 1294 July 21.
Bamboo

Label

16.25 candles
1310 = N
103.3

6650
6250
6250
6290
6290
3175
1586

a little blue in globe

No. 1294 Bamboo

66 1/2 inches
44 candles

2-10 | Went at top
2 minutes about
Very carefully brought
up so as not to exceed
48 candles

Bamboo
No. 1296 flatways
Good carbon
15.5 candle

43.00
62.50
62.50
62.90
62.90

No Galvo

292.80
146.9 Ohms

2.0346
2.0344
1.6464
7.8749
3.3905 3900

Bamboo
No. 1296

2-24 86.5 inches. 48 candles
Very carefully brought up so as not to exceed 48 candles.
1600
6290
6290
6250
6250
26680
133.4
1325
108.3
2-50 West
24
26

Bamboo No. 1300 July 21

Reversed current

4-37 4-41	48 candles 4 minutes

This showed ~~a~~ a bad short at the bottom. With constant current should not expect it to last more than one minute.

July 21, 80

Bart regular 0"012 X 0"012 X 4"
. Reversed current

4-47	66.5 inches
	48 candles
	Should ex fast to last less than two minutes as it burnt a hard glare
5.7½	burnt.
13 / 20½	minute

1.9460
1.9460
1.6464
7.9338
3.4722

2920

No. 1312

Jap. Bamboo V = 112

Slightly thin

16 candles slightly

4450
6250
6290
6290
23280
116.4

265 = N
88.8

2.0182
2.0182
1.6469
7.9605
33

9-6 48 candles 66½ inches
Globe very blue

6250
6290
6290
3000
21830
109.15

313 = A
107.3

before 9-17 blue entirely left the lamp

9-21 Went slightly
No carbon on clamps
15 minutes

No 1311 July 22-80

Jap's Bamboo

Very slight brightness

16 candles

an extremely faint blue

in lamp

$\frac{265}{883} = \Delta$

3700
6250
6290
6290

22530

1126

Lamp No. 1311

Gals. bamboo

July 22

10-57 One side in lamp broken
48 candles
Very blue completely filling globe
32 # = D

6290
6290
6250
600

11-11 E. M. F constant
Tint in flickering blue
the entirely clear

11-17 W cut at spot
Nose deposition on lamps very
high vacuum.
20 Minutes

No. 1301 Extremely good carbon
Bamboo Regular

Feb 7-8 — 269

V=112

Reversed current
48 candles

11-28 213 = D

Blue in globe
Higher than 48 candles

11-46 Blue in globe disappeared

11-54 Went

This lamp had run up much higher than 48 candles on account of reversing key running slower

Bamboo

2-8 Reversed currents
212 = D
48 candles
Limit blue
2-21 Wants ult spot

Bernhow
reversed currents

~~4-14~~ Very little blue
good carbon
Big mistake went
very high

4-14 4 & candle
66 1/2 cm

4-16 Went

Edison

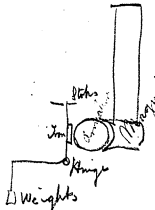
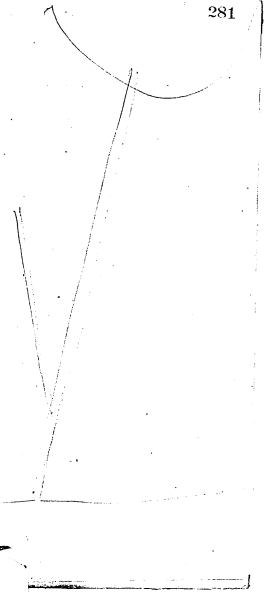
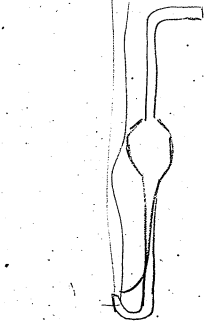
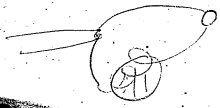
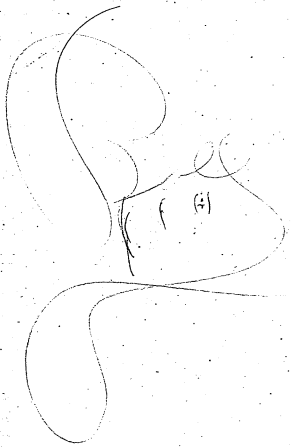
Pt. Iridium .005, 16% Cu

be brought up to one candle or less in the air & observed then measured as the arm is to be traveled

Edison

Carbons to be sealed in small and large globes and carefully measured then clipped and numbered 5 of each kind Edison.

Lamps to be sealed with Mac Leod gauge and when maximum reached from time to time Edison will go on the armature & to be placed in front of magnet and the magnetism in it tested.



Test relation between magnet and armature of both machines and small wrought iron motor